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IN THE

Supreme Court of the United States

OCTOBER TERM, 1945.

No. [redacted] 24

HALLIBURTON OIL WELL CEMENTING COMPANY, a Delaware corporation, *Petitioner*,

v.

CRANFORD P. WALKER AND CRANFORD P. WALKER, D. A. WALKER, ROBERT P. MILLER AND MILO C. KETCHUM, doing business as Depthograph Company, a copartnership, *Respondents*.

PETITION BY THE HALLIBURTON OIL WELL CEMENTING COMPANY FOR REHEARING OR OTHER RELIEF AND FOR STAY OF ISSUANCE OF MANDATE.

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IN THE

Supreme Court of the United States

OCTOBER TERM, 1945.

No. 290.

HALLIBURTON OIL WELL CEMENTING COMPANY, a Delaware corporation, *Petitioner*,

v.

CRANFORD P. WALKER AND CRANFORD P. WALKER, D. A. WALKER, ROBERT P. MILLER AND MILO C. KETCHUM, doing business as Depthograph Company, a copartnership, *Respondents*.

PETITION BY THE HALLIBURTON OIL WELL CEMENTING COMPANY FOR REHEARING OR OTHER RELIEF AND FOR STAY OF ISSUANCE OF MANDATE.

Comes now Halliburton Oil Well Cementing Company, Petitioner in the above cause, and respectfully prays for a rehearing or other relief and for a stay of issuance of the mandate of this Court.

The judgment of the Ninth Circuit Court of Appeals (146 F. (2d) 817 and 149 F. (2d) 896, R. 1594, 1614) holding patent 2,156,519 valid and infringed was affirmed by this Court on January 28, 1946, by an order *per curiam*, this Court being equally divided.

Petitioner prays for an order vacating the order of January 28, 1946 and for a rehearing on the two questions of law involved in this cause, or, in the alternative, for an order vacating the order of January 28, 1946, and remanding the cause to the Ninth Circuit Court of Appeals for a ruling by that Court on what effect the decision of this Court in *Schriber-Schroth Co.* v. *Cleveland Trust Co.*, 311 U. S. 211, has upon the facts of this case.

An equal division of the Justices of this Court on questions of public importance only protracts their final adjudication and is recognized as a tragedy. Because of this, cases involving important Federal questions upon which majorities of the Court do not concur are sometimes restored to the docket for reargument before a full bench, this practice being initiated in *Mayor of New York* v. *Miln*, 8 Peters 120, 33 U. S. 120, 8 L. Ed. 888.

In the following cases, petitions for rehearing were granted under such conditions. *Home Insurance Company* v. *New York*, 134 U. S. 594, 33 L. Ed. 1025 (see 119 U. S. 129, 30 L. Ed. 350, for affirmance by a divided Court); The *Selma Rome & Dalton R. R. Co.* v. *U. S.*, 122 U. S. 636, 30 L. Ed. 1249; *U. S.* v. *Sischo*, 262 U. S. 165, 67 L. Ed. 925 (see 260 U. S. 697, 67 L. Ed. 469, for affirmance by a divided Court); *Bernards* v. *Johnson*, 313 U. S. 597, 85 L. Ed. 1550 (see 313 U. S. 537, 85 L. Ed. 1507 for affirmance by a divided Court); *Gray* v. *Powell*, 313 U. S. 596, 85 L. Ed. 1550 (see 312 U. S. 666, 85 L. Ed. 1111 for affirmance by a divided Court); *U. S.* v. *One 1936 Ford Coach*, 305 U. S. 666, 83 L. Ed. 432 (see 305 U. S. 564, 83 L. Ed. 355 for affirmance by a divided Court); *Railroad Commission of California* v. *Pacific Gas & Electric Co.*, 302 U. S. 771, 82 L. Ed. 598 (see 301 U. S. 669, 81 L. Ed. 1333 for affirmance by a divided Court); *Lesenba* v. *State of California*, 313 U. S. 597, 85 L. Ed. 1550, (see 313 U. S. 537, 85 L. Ed. 1507 for affirmance by a divided Court); *Reitz* v. *Mealey*, 313 U. S. 597, 85 L. Ed. 1550 (see 313 U. S. 542, 85 L. Ed. 1510 for affirmance by a divided Court); *Baltimore and Ohio R. R.* v. *Kepner*,

313 U. S. 597, 85 L. Ed. 1550 (see 313 U. S. 542, 85 L. Ed. 1510 for affirmance by a divided Court).

Especially is a rehearing desirable in the present case, since, at the time of the hearing, three of the Justices were absent from the bench due to illness or because of duties elsewhere. Unlike a situation where a Justice is disqualified for some reason, on rehearing there is "the expectation that a larger number of the Judges may then be present." *Mayor of New York* v. *Miln, supra.*

THE CASE OF GENERAL ELECTRIC CO. v. WABASH APPLIANCE CORP., 304 U. S. 364, SHOULD BE INTERPRETED.

The first question raised by the case at bar is concerned with the application of the doctrine of *General Electric Co.* v. *Wabash Appliance Corp.*, 304 U. S. 364, 82 L. Ed. 1402 to a claim of a patent on a combination of elements.

This is a question of great public importance. In the few years since the opinion in the *General Electric Co.* v. *Wabash* case was delivered, it has been cited and relied on by the lower courts in many cases. Perhaps no opinion of this Court has more clearly set forth the law on the use of functional language in the claims of a patent.

Judge Denman has stated (149 F (2d) 896, R. 1615) that the case at bar is one of "novel import" in its application of the doctrine of the *General Electric* v. *Wabash* case to claims on a *combination* of elements.

But several Circuit Courts of Appeals and the Court of Customs and Patent Appeals have cited the *General Electric* v. *Wabash* case in support of rulings that *structural* rather than *functional* limitations must be employed in claims on *combinations* to define the novelty of the invention. These cases are in direct conflict with the rulings of the Ninth Circuit Court of Appeals in the present case that the doctrine of the *General Electric* v. *Wabash* case applies only to claims to a "single element" (149 F (2d) 896, R. 1614) or "specific product" (149 F (2d) 896, R. 1616).

These conflicting cases are reviewed briefly here.

In *Rice* v. *Nash-Kelvinator Corp.*, 150 F. (2d) 457, (CCA-6), decided since the Ninth Circuit Court of Appeals rendered its decision in the case at bar, a patent on a refrigeration machine was involved. Claim 3 called for a *combination* of old elements, a compressor, a condenser, an evaporator and pipe connections, with a new element, a *capillary tube*. The claim was thus identical in form with that of the claims in the case at bar. The Sixth Circuit Court of Appeals stated:

> "Claim 3 requires a capillary tube such as will maintain the predetermined ratio described above 'and minimize any tendency of the tube to clog, the said parts of the refrigerating machine and the refrigerant charge being so co-ordinated that the single capillary tube is adapted to function as the regulating device of the flow between the condenser and the evaporator and by reason of the said co-ordination the liquid level in the evaporator is maintained between narrow limits.'
>
> "These portions of the claims describe not the structure, but the function or purpose to be achieved by the tube. This practice has recently been condemned. General Electric Co. v. Wabash Appliance Corporation, 304 U. S. 364, 371, 58 S. Ct. 899, 82 L. Ed. 1402; United Carbon Co. v. Binney & Smith Co., 317 U. S. 228, 234, 63 S. Ct. 165, 87 L. Ed. 232."
>
> —150 F (2d) 460.

In another recent case, *Application of Horton et al*, 151 F (2d) 210, the Court of Customs and Patent Appeals had before it a number of claims on combinations of elements. These had been rejected by the Examiner and the Board of Appeals in the Patent Office because "their broad and indefinite language fails to make a clear distinction" over the prior art. The Court of Customs and Patent Appeals reversed the Patent Office tribunals as to some of the claims because they contained structural limitations, but it affirmed the Patent Office tribunals as to those claims which attempted to distinguish from the prior art only by functional limitations, the Court stating:

"The board was further of opinion, as stated in its decisions, that the claims here on appeal do not define the 'generic novelty' of appellants' device in terms of structure, but rather in terms of function.

"If the latter holding of the board is correct, the rejection should be sustained, since claims drawn to apparatus cannot be allowed unless they distinguish from the prior art in terms of structure. In re Skaupy, 67 F. 2d 492, 21 C.C.P.A., Patents, 712; In re Carr, 120 F. 2d 386, 28 C.C.P.A., Patents, 1240; General Electric Co. v. Wabash Appliance Corp, et al., 304 U. S. 364, 370, 371, 58 S. Ct. 899, 82 L. Ed. 1402."

—151 F (2d) 213.

In *Kool Kooshion Mfg. Co.* v. *Mitchell Mfg. Co.*, 102 F (2d) 37, (CCA-8), a patent on a combination of several elements was involved. The Court stated:

"Appellee urges that claim 3 is invalid as being indefinite in that it specifies no definite fabric enclosure nor any definite means of extending and holding extended the cushion. There is serious question whether this criticism is not well founded under the doctrine of General Electric Co. v. Wabash Appliance Corp., 304 U. S. 364, 370-375, 58 S. Ct. 899, 82 L. Ed. 1402."

—102 F (2d) 38.

In *Allen-Bradley Co.* v. *Erie Resistor Corp.*, 104 F (2d) 150 (CCA-3), the following claim was involved:

"7. As an article of manufacture, an electrical resistor unit having as ingredients thereof, a non-conducting material serving as a filler, a suitable material affording a binder, and carbon black calcined to substantially graphitizing temperature."

—104 F (2d) 151.

The Court stated:

"The appellant therefore is caught between the horns of a dilemma. If the phrase 'to substantially graphitizing temperatures' as used in the claims be construed to mean what we think Power and Bradley must have intended it to mean, viz., calcining temper-

atures of not less than 1927° centigrade, we must also hold that the appellee's processes do not infringe the three claims now under discussion. If, upon the other hand, we do not so interpret the phrase referred to in the claims in question, there is no doubt that the claims are invalid for want of definiteness. General Electric Co. v. Wabash Appliance Corp., 304 U. S. 364, 371, 58 S. Ct. 899, 82 L. Ed. 1402, 1407. (Other cases cited). So regarding, and without passing upon the validity of the disclosures of the patent over the prior art, we concur in the ruling of the District Judge that claims 4, 7, and 8 of the patent are not infringed by the appellee's processes."

—104 F (2d) 152.

In *Hazeltine Corporation* v. *Emerson Television-Radio, Inc.*, 129 F (2d) 580, (CCA-2) the following claim to a combination was involved:

"5. The combination of a large conical diaphragm, with a casing open at opposite ends disposed about the edge of said diaphragm and providing an open sound chamber at the rear of said diaphragm serving to enhance the operation thereof throughout its frequency range."

—129 F (2d) 581.

The Court stated:

"The term 'large diaphragm' had an accepted meaning in the art. Otherwise claims 1, 3 and 5, which call for a 'large' diaphragm, might well be thought so vague as to be invalid. Cf. B. B. Chemical Co. v. Cataract Chemical Co., 2 Cir., 122 F. 2d 526, 530; General Electric Co. v. Wabash Appliance Corp., 304 U. S. 364, 58 S. Ct. 899, 82 L. Ed. 1402."

—129 F (2d) 581

See also *In Re Cohen*, 133 F (2d) 924, 928, 929, (C.C. P.A.); *Timken Detroit Axle Co.* v. *Cleveland Steel Products Corp.*, 148 F (2d) 267, 269, (CCA-6).

Except for the ruling of the Ninth Circuit Court of Appeals in the case at bar, we have found no case holding

that the doctrine of *General Electric* v. *Wabash Appliance Corp.*, 304 U. S. 364, should be limited, in its application, to claims on a *single element*. It has universally been held that the case sets forth the doctrine "that functional statements cannot be availed of to define over the prior art." *Mead Johnson & Co.* v. *Hillman's Inc.*, 135 F (2d) 955, 958, (CCA-7). As stated by the Court of Appeals for the District of Columbia in *Minnesota Mining & Mfg. Co.* v. *Coe*, 113 F. (2d) 512, 513, in an opinion by Associate Justice Rutledge,

> "It has been held that a description by function does not comply with the statutory requirement that the inventor 'shall particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery.' Rev. Stat. Sec. 4888, 35 U.S.C. (1934) Sec. 33, 35 U.S.C.A. Sec. 33; General Electric Co. v. Wabash Co., 1938, 304 U. S. 364, 58 S. Ct. 899, 82 L. Ed. 1402; Koebel v. Coe, 1939, 70 App. D.C. 261, 105 F. 2d 784."

This Court has not heretofore limited the doctrine to the "single element" class of invention involved in the *General Electric v. Wabash* case. In *Universal Oil Products Co.* v. *Globe Oil & Ref. Co.*, 322 U. S. 471, 484, 88 L. Ed. 1399, 1407, the case is cited and the doctrine applied to process claims.

The Ninth Circuit Court of Appeals itself seems to be in doubt as to the application of the doctrine of the *General Electric* v. *Wabash* case to claims on a combination of elements. In *John Bean Mfg. Co.* v. *Creagmile*, 123 F (2d) 182, claims to a combination were involved. In the opinion written by Judge Denman, there is an analysis of the claims there involved similar to Judge Denman's analysis (149 F. (2) 896, R. 1615) of one of the claims in the case at bar, and the opinion then states:

> "We believe there is grave doubt as to whether or not these claims are valid on their face on the ground of their failure to make disclosure sufficiently definite to satisfy the requirements of R. S. 4888, 35 U.S.C.A. Sec. 33. Cf. General Electric Co. v. Wabash Appliance Corp., 304 U. S. 364, 368-370, 58 S. Ct. 899, 82 L.

Ed. 1402. However, we have resolved our doubt in favor of examining into the question of novelty and anticipation."

—123 F (2d) 184.

See also *Farmers Cooperative Exchange* v. *Turnbow*, 111 F (2d) 738 (CCA-9), where claims to a combination were held invalid because they used "conveniently functional language at the exact point of novelty."

Respondents rely upon *Continental Paper Bag Co.* v. *Eastern Paper Bag Co.*, 210 U. S. 405, in support of their contention that it is proper to use only functional limitations to define the novel element in a claim to a combination. The *Paper Bag Case* is analyzed in *Davis Sewing Machine Co.* v. *New Departure Mfg. Co.*, 217 F. 775, 783, (CCA-6), and for the reasons there given, we believe that no such construction is warranted. As shown by the above cited cases, the construction of the *Paper Bag Case* sought by Respondents is entirely contrary to the generally accepted interpretation of the *General Electric* v. *Wabash* case.

The Ninth Circuit Court of Appeals has ruled that the *General Electric* v. *Wabash* case is distinguishable from the facts in the case at bar because the patent involved there was for a specific product instead of for a combination (149 F (2d) 896, R. 1616). Affirmance of the decision of the Ninth Circuit Court of Appeals by an equally divided Court can create nothing but confusion. We urge that this case be restored to the docket for reargument before a full bench so that the correct interpretation of the *Paper Bag Case* and the *General Electric* v. *Wabash* case may be settled.

THE CASE OF SCHRIBER-SCHROTH v. CLEVELAND TRUST CO., 311 U. S. 211, SHOULD BE CONSIDERED IN CONNECTION WITH THE FACTS IN THIS CASE.

Affirmance by an equally divided Court of the decision of the Ninth Circuit Court of Appeals on the second question involved in this cause presents an anomalous situation, for the Court of Appeals has not ruled on this question. Petitioner pleaded "file wrapper estoppel" (R. 17) and assigned as error (R. 40) the failure of the District Court to find that the proceedings in the Patent Office estopped Respondents from asserting equivalency between an electrical filter and an acoustical tuned resonator. The Circuit Court of Appeals ignored the proceedings in the Patent Office and rendered no decision as to the effect of those proceedings. This Court granted certiorari, Petitioner relying upon, as one of three reasons for the allowance of the writ:

> "2. That the Circuit Court of Appeals for the Ninth Circuit, by ignoring the rejection, cancellation and abandonment of a claim in a copending application for patent, has so construed the claims in suit as to cause them to cover subject matter refused Respondents by the Patent Office and has imposed undue restrictions on the rules governing the construction of claims set forth in Schriber-Schroth Co. v. Cleveland Trust Co., 311 U. S. 211, 220, 221, 85 L. Ed. 132, 137, 138."

The affirmance by an equally divided Court leaves this question undecided. It is not even mentioned in any decision. Surely, Petitioner is entitled to a ruling by some Court as to the merits of this defense. If a rehearing by this Court before a full bench is not feasible, it is urged that this Court vacate the order of January 28, 1946, and remand the case to the Ninth Circuit Court of Appeals for

action on this question, following the procedure outlined in *Cole* v. *Ralph*, 252 U. S. 286, 290, 64 L. Ed. 567, 574.

Respectfully submitted,

EARL BABCOCK,
HARRY C. ROBB,
Attorneys for Petitioner.

I, Harry C. Robb, attorney for the above named Petitioner, do hereby certify that the foregoing petition for rehearing or other relief and for stay of issuance of mandate is presented in good faith and not for delay.

HARRY C. ROBB.

February 15, 1946.

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SUPREME COURT OF THE UNITED STATES

No. 24—October Term, 1946.

Halliburton Oil Well Cementing Company, Petitioner, v. Cranford P. Walker, et al., doing business as Depthograph Company, a Corporation.	On Writ of Certiorari to the United States Circuit Court of Appeals for The Ninth Circuit.

[November 18, 1946.]

Mr. Justice Black delivered the opinion of the Court.

Cranford P. Walker, owner of Patent No. 2,156,519, and the other respondents, licensees under the patent, brought this suit in a federal district court alleging that petitioner, Halliburton Oil Well Cementing Company, had infringed certain of the claims of the Walker patent. The district court held the claims in issue valid and infringed by Halliburton. The circuit court of appeals affirmed, 146 F. 2d 817, and denied Halliburton's petition for rehearing. 149 F. 2d 896. Petitioner's application to this Court for certiorari urged, among other grounds, that the claims held valid failed to make the "full, clear, concise, and exact" description of the alleged invention required by Rev. Stat. 4888, 35 U. S. C. § 33,[1] as that statute was interpreted by us in *General Electric Co.* v. *Wabash Elec-*

[1] "33. Application for Patent; Description; Specification and Claim.—Before any inventor or discoverer shall receive a patent for his invention or discovery he shall make application therefor, in writing, to the Commissioner of Patents, and shall file in the Patent Office a written description of the same, and of the manner and process of making, constructing, compounding, and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art or science to which it appertains, or with which it is most nearly connected, to make, construct, compound, and use

tric Co., 304 U. S. 364.[2] This statutory requirement of distinctness and certainty in claims is important in patent law. We granted certiorari to consider whether it was correctly applied in this case. 326 U. S. 705.[3]

The patent in suit was sustained as embodying an improvement over a past patent of Lehr and Wyatt (No. 2,047,974) upon an apparatus designed to facilitate the pumping of oil out of wells which do not have sufficient natural pressures to force the oil to gush. An outline of the background and setting of these patents is helpful to an understanding of the problem presented.

In order to operate a pump in an oil well most efficiently, cheaply, and with the least waste, the pump must be placed in an appropriate relationship to the fluid surface of the oil. Properly to place the pump in this relationship requires knowledge of the distance from the well top to the fluid surface. At least by the latter 1920's problems of waste and expense in connection with non-gusher oil wells pressed upon the industry. See *Railroad Comm'n. of Texas* v. *Rowan and Nichols Oil Co.*, 310 U. S. 573; *Burford* v. *Sun Oil Co.*, 319 U. S. 315. It became apparent that inefficient pumping, one cause of waste, was in some measure attributable to lack of accurate knowledge of distance from well top to fluid surface. Ability to measure this distance in each separate non-gusher oil well became an

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the same; and in case of a machine, he shall explain the principle thereof, and the best mode in which he has contemplated applying that principle, so as to distinguish it from other inventions; and he shall particularly point out and distinctly claim the part, improvement, or combination which he claims as his invention or discovery . . ."

[2] Other alleged errors were urged in the application for certiorari and have been argued here, but since we find the question of definiteness of the claim decisive of the controversy, we shall not further advert to the other contentions.

[3] This case was previously affirmed by a divided court, 326 U. S. 696, and upon petition for rehearing was restored to the docket for reargument. — U. S. —.

obvious next step in the solution of this minor aspect of the problem of waste.

The surface and internal machinery and the corkscrew conformation of some oil wells make it impractical to measure depth by the familiar method of lowering a rope or cable. In casting about for an alternative method it was quite natural to hit upon the possibility of utilizing a sound-echo-time method. Unknown distances had frequently been ascertained by this method. Given the time elapsing between the injection of a sound into an oil well and the return of its echo from the fluid surface, and assuming the velocity of the sound to be about 1100 feet per second, as it is in the open air, it would be easy to find the distance. Not only had this sound-echo-time method been long known and generally used to find unknown distances, but in 1898 Batcheller, in Patent No. 602,422, had described an apparatus to find a distance in a tubular space. Obviously an oil well is such a space. He described a device whereby the noise from a gun might be injected into a tube; the returning echoes from obstructions agitated a diaphragm, which in turn moved a stylus. The stylus recorded on a piece of paper a graph or diagram showing the variant movements of the diaphragm caused by its response to all the different echo waves.

In the late 1920's the oil industry began to experiment in the use of this same sound-echo-time method for measuring the distance to the fluid surface in deep oil wells. A product of this experimentation was the Lehr and Wyatt patent, upon which the present patent claims to be an improvement. It proposed to measure the distance by measuring the time of travel of the echo of "an impulse wave" generated by a "sudden change in pressure." The apparatus described included a gas cylinder with a quick operating valve by means of which a short blast of gas could be injected into a well. It was stated in the patent that the time elapsing between the release of the gas and the return of the echo of the waves produced by it could be

observed in any desired manner. But the patentee's application and drawings noted that the wave impulses could be recorded by use of a microphone which might include an amplifier and an appropriate device to record a picture of the wave impulses.

This Lehr and Wyatt patent, it is therefore apparent, simply provided an apparatus composed of old and well-known devices to measure the time required for pressure waves to move to and back from the fluid surface of an oil well. But the assumption that sound and pressure waves would travel in oil wells at open-air velocity of 1100 feet per second proved to be erroneous. For this reason the time-velocity computation of Lehr and Wyatt for measuring the distance to the fluid surface produced inaccurate results.

After conferences with Lehr, Walker undertook to search for a method which would more accurately indicate the sound and pressure wave velocity in each well. Walker was familiar with the structure of oil wells. The oil flow pipe in a well, known as a tubing string, is jointed and where these joints occur there are collars or shoulders. There are also one or more relatively prominent projections on the oil flow pipe known as tubing catchers. In wells where the distance to the tubing catcher is known, Walker observed that the distance to the fluid surface could be measured by a simple time-distance proportion formula.[4] For those wells in which the distance to the

[4] The known distance from well top to the tubing catcher is to the unknown distance from well top to the fluid surface as the time an echo requires to travel from the tubing catcher is to the time required for an echo to travel from the fluid surface.

Walker's patent emphasizes that his invention solves the velocity of sound waves in wells of various pressures in which sound did not travel at open-air or a uniform speed. Mathematically, of course, his determination of the distance by proportions determines the distance to the fluid surface directly without necessarily considering velocity in feet per second as a factor.

tubing catcher was unknown, Walker also suggested another idea. The sections of tubing pipe used in a given oil well are generally of equal length. Therefore the shoulders in a given well ordinarily are at equal intervals from each other. But the section length and therefore the interval may vary from well to well. Walker concluded that he could measure the unknown distance to the tubing catcher if he could observe and record the shoulder echo waves. Thus multiplication of the number of shoulders observed by the known length of a pipe section would produce the distance to the tubing catcher. With this distance, he could solve the distance to the fluid surface by the same proportion formula used when the distance to the tubing catcher was a matter of record. The Lehr and Wyatt instrument could record all these echo waves. But the potential usefulness of the echoes from the shoulders and the tubing catcher which their machine recorded had not occurred to Lehr and Wyatt and consequently they had made no effort better to observe and record them. Walker's contribution which he claims to be invention was in effect to add to Lehr and Wyatt's apparatus a well-known device which would make the regularly appearing shoulder echo waves more prominent on the graph and easier to count.

The device added was a mechanical acoustical resonator. This was a short pipe which would receive wave impulses at the mouth of the well. Walker's testimony was, and his specifications state, that by making the length of this tubal resonator one-third the length of the tubing joints, the resonator would serve as a tuner, adjusted to the frequency of the shoulder echo waves. It would simultaneously amplify these echo waves and eliminate unwanted echoes from other obstructions thus producing a clearer picture of the shoulder echo waves. His specifications show, attached to the tubal resonator, a coupler, the manipulation of which would adjust the length of the tube

to one-third of the interval between shoulders in a particular well. His specifications and drawings also show the physical structure of a complete apparatus, designed to inject pressure impulses into a well, and to receive, note, record and time the impulse waves.

The district court held the claims here in suit valid upon its finding that Walker's "apparatus differs from and is an improvement over the prior art in the incorporation in such apparatus of a tuned acoustical means which performs the functions of a sound filter . . . ." The circuit court of appeals affirmed this holding, stating that the trial court had found "that the only part of this patent constituting invention over the prior art is the 'tuned acoustical means which performs the functions of a sound filter.'"

For our purpose in passing upon the sufficiency of the claims against prohibited indefiniteness we can accept without ratifying the findings of the lower court that the addition of "a tuned acoustical means" performing the "functions of a sound filter" brought about a new patentable combination, even though it advanced only a narrow step beyond Lehr and Wyatt's old combination.[5] We must, however, determine whether, as petitioner charges, the claims here held valid run afoul of Rev. Stat. 4888 because they do not describe the invention but use "conveniently functional language at the exact point of novelty." *General Electric Co.* v. *Wabash Electric Co.*, *supra*, at 371.

Walker, in some of his claims, *e. g.*, claims 2 and 3, does describe the tuned acoustical pipe as an integral part of his invention, showing its structure, its working arrangement in the alleged new combination, and the manner of

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[5] See *Hailes* v. *Van Wormer*, 20 Wall. 353; *Knapp* v. *Morss*, 150 U. S. 221, 227–28; *Textile Machine Works* v. *Louis Hirsch Textile Machines, Inc.*, 302 U. S. 490; *Lincoln Engineering Co.* v. *Stewart Warner Corp.*, 303 U. S. 545, 549–50.

its connection with the other parts. But no one of the claims on which this judgment rests has even suggested the physical structure of the acoustical resonator.[6] No one of these claims describes the physical relation of the Walker addition to the old Lehr and Wyatt machine. No one of these claims describes the manner in which the Walker addition will operate together with the old Lehr and Wyatt machine so as to make the "new" unitary apparatus perform its designed function. Thus the claims failed adequately to depict the structure, mode, and operation of the parts in combination.

A claim typical of all of those held valid only describes the resonator and its relation with the rest of the apparatus as "means associated with said pressure responsive device for tuning said receiving means to the frequency of echoes from the tubing collars of said tubing section to clearly distinguish the echoes of said couplings from each other."[7] The langauge of the claim thus describes this

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[6] Halliburton does not challenge the adequacy of the description of any other features of the "new combination." The elements of Walker's apparatus other than the filter are so nearly identical to what Lehr and Wyatt patented that we can speak of these other elements as the "Lehr and Wyatt machine."

[7] Both parties have used Claim 1 as a typical example for purposes of argument throughout the litigation. Other claims need not be set out. Claim 1 is as follows:

"In an apparatus for determining the location of an obstruction in a well having therein a string of assembled tubing sections interconnected with each other by coupling collars, means communicating with said well for creating a pressure impulse in said well, echo receiving means including a pressure responsive device exposed to said well for receiving pressure impulses from the well and for measuring the lapse of time between the creation of the impulse and the arrival at said receiving means of the echo from said obstruction, and means associated with said pressure responsive device for tuning said receiving means to the frequency of echoes from the tubing collars of said tubing sections to clearly distinguish the echoes from said couplings from each other."

most crucial element in the "new" combination in terms of what it will do rather than in terms of its own physical characteristics or its arrangement in the new combination apparatus. We have held that a claim with such a description of a product is invalid as a violation of Rev. Stat. 4888. *Holland Furniture Co.* v. *Perkins Glue Co.*, 277 U. S. 245, 256–57; *General Electric Co.* v. *Wabash Electric Co.*, *supra*. We understand that the circuit court of appeals held that the same rigid standards of description required for product claims is not required for a combination patent embodying old elements only. We have a different view.

Rev. Stat. 4888 pointedly provides that "in the case of a machine, he [the patentee] shall explain the principle thereof, and the best mode in which he has contemplated applying the principle, so as to distinguish it from other inventions; and he shall particularly point out and distinctively claim the part, improvement, or combination which he claims as his invention or discovery." It has long been held that the word "machine" includes a combination. *Corning et al.* v. *Burden*, 15 How. 252, 267. We are not persuaded that the public and those affected by patents should lose the protection of this statute merely because the patented device is a combination of old elements.

Patents on machines which join old and well-known devices with the declared object of achieving new results, or patents which add an old element to improve a pre-existing combination, easily lend themselves to abuse. And to prevent extension of a patent's scope beyond what was actually invented, courts have viewed claims to combinations and improvements or additions to them with very close scrutiny. *Cf. Lincoln Engineering Co.* v. *Stewart Warner Corp.*, 303 U. S. 545, 549–51. For the same reason, courts have qualified the scope of what is meant by the equivalent of an ingredient of a combination of old elements. *Gill* v. *Wells*, 22 Wall. 1, 28, 29. *Fuller* v. *Yentz-*

ler, 94 U. S. 288, 297, 298. It is quite consistent with this strict interpretation of patents for machines which combine old elements to require clear description in combination claims. This view, clearly expressed in *Gill* v. *Wells*, *supra*, is that

> "Where the ingredients are all old the invention . . . consists entirely in the combination, and the requirement of the Patent Act that the invention shall be fully and exactly described applies with as much force to such an invention as to any other class, because if not fulfilled all three of the great ends intended to be accomplished by that requirement would be defeated. . . . (1.) That the Government may know what they have granted and what will become public property when the term of the monopoly expires. (2.) That licensed persons desiring to practice the invention may know, during the term, how to make, construct, and use the invention. (3.) That other inventors may know what part of the field of invention is unoccupied.
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> "Purposes such as these are of great importance in every case, but the fulfillment of them is never more necessary than when such inquiries arise in respect to a patent for a machine which consists of a combination of old ingredients. Patents of that kind are much more numerous than any other, and consequently it is of the greatest importance that the description of the combination, which is the invention, should be full, clear, concise, and exact." *Gill* v. *Wells*, *supra*, at 25–26.

These principles were again emphasized in *Merrill* v. *Yeomans*, 94 U. S. 568, 570, where it was said that ". . . in cases where the invention is a new combination of old devices, he [the patentee] is bound to describe with particularity all these old devices, and then the new mode of combining them, for which he desires a patent." This view has most recently been reiterated in *General Electric Co.* v. *Wabash Electric Co.*, *supra* at 368, 369. Cogent reasons would have to be presented to persuade us to

depart from this established doctrine. The facts of the case before us, far from undermining our confidence in these earlier pronouncements, reinforce the conclusion that the statutory requirement for a clear description of claims applies to a combination of old devices.

This patent and the infringement proceedings brought under it illustrate the hazards of carving out an exception to the sweeping demand Congress made in Rev. Stat. 4888. Neither in the specification, the drawing, nor in the claims here under consideration, was there any indication that the patentee contemplated any specific structural alternative for the acoustical resonator or for the resonator's relationship to the other parts of the machine. Petitioner was working in a field crowded almost, if not completely, to the point of exhaustion. In 1920, Tucker, in Patent No. 1,451,356, had shown a tuned acoustical resonator in a sound detecting device which measured distances. Lehr and Wyatt had provided for amplification of their waves. Sufficient amplification and exaggeration of *all* the different waves which Lehr and Wyatt recorded on their machine would have made it easy to distinguish the tubing catcher and regular shoulder waves from all others. For, even without this amplification, the echo waves from tubing collars could by proper magnification have been recorded and accurately counted, had Lehr and Wyatt recognized their importance in computing the velocity. *Cf. General Electric Co.* v. *Jewel Incandescent Lamp Co.*, 326 U. S. 242.

Under these circumstances the broadness, ambiguity, and verhanging threat of the functional claim of Walker become apparent. What he claimed in the court below and what he claims here is that his patent bars anyone from using in an oil well any device heretofore or hereafter invented which combined with the Lehr and Wyatt machine performs the function of clearly and distinctly catching and recording echoes from tubing joints with

regularity. Just how many different devices there are of various kinds and characters which would serve to emphasize these echoes, we do not know. The Halliburton device, alleged to infringe, employs an electric filter for this purpose. In this age of technological development there may be many other devices beyond our present information or indeed our imagination which will perform that function and yet fit these claims. And unless frightened from the course of experimentation by broad functional claims like these, inventive genius may evolve many more devices to accomplish the same purpose. See *United Carbon Co. et al.* v. *Binney & Smith Co.*, 317 U. S. 228, 236; *Burr* v. *Duryee*, 1 Wall. 531, 568; *O'Reilly, et al.* v. *Morse, et al.*, 15 How. 62, 112–13. Yet if Walker's blanket claims be valid, no device to clarify echo waves, now known or hereafter invented, whether the device be an actual equivalent of Walker's ingredient or not, could be used in a combination such as this, during the life of Walker's patent.

Had Walker accurately described the machine he claims to have invented, he would have had no such broad rights to bar the use of all devices now or hereafter known which could accent waves. For had he accurately described the resonator together with the Lehr and Wyatt apparatus, and sued for infringement, charging the use of something else used in combination to accent the waves, the alleged infringer could have prevailed if the substituted device (1) performed a substantially different function; (2) was not known at the date of Walker's patent as a proper substitute for the resonator; or (3) had been actually invented after the date of the patent. *Fuller* v. *Yentzler, supra*, at 296–97; *Gill* v. *Wells, supra*, at 29. Certainly, if we are to be consistent with Rev. Stat. 4888, a patentee cannot obtain greater coverage by failing to describe his invention than by describing it as the statute commands.

It is urged that our conclusion is in conflict with the decision of *Continental Paper Bag Co.* v. *Eastern Paper Bag Co.*, 210 U. S. 405. In that case, however, the claims structurally described the physical and operating relationship of all the crucial parts of the novel combination.[8] The court there decided only that there had been an infringement of this adequately described invention. That case is not authority for sustaining the claims before us which fail adequately to describe the alleged invention.

Reversed.

MR. JUSTICE FRANFURTER concurs with the Court's opinion in so far as it finds this claim lacking in the definiteness required by Rev. Stat. 4888, 35 U. S. C. § 33, but reserves judgment as to considerations that may be peculiar to combination patents in satisfying that requirement.

MR. JUSTICE BURTON dissents.

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[8] The typical claim there in suit was as follows:

"2. In a paper bag machine, the combination of the rotating cylinder provided with one or more pairs of side folding fingers adapted to be moved toward or from each other, a forming plate also provided with side forming fingers adapted to be moved toward or from each other, means for operating said fingers at definite times during the formative action upon the bag tube, operating means for the forming plate adapted to cause the said plate to oscillate about its rear edge upon the surface of the cylinder during the rotary movement of said cylinder for the purpose of opening and forming the bottom of the bag tube, a finger moving with the forming plate for receiving the upper sheet of the tube and lifting it during the formative action, power devices for returning the forming plate to its original position to receive a new bag tube, and means to move the bag tube with the cylinder." *Continental Paper Bag Co.* v. *Eastern Paper Bag Co.*, 210 U. S. 405, 417, n. 1.